Arkansas Department of Health
Public Water Supply Supervision Program

And

Arkansas Department of Education

Quality Assurance Project Plan

Lead Testing in Schools and Child Care Facilities

WIIN 2107

September 2019

Engineering Section
Environmental Health Branch
Center for Local Public Health
Arkansas Department of Health

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A2. Title and Approval

Document Title: Quality Assurance Project Plan (QAPP) for the EPA WIIN 2017 Lead Testing in Schools and Child Care Facilities

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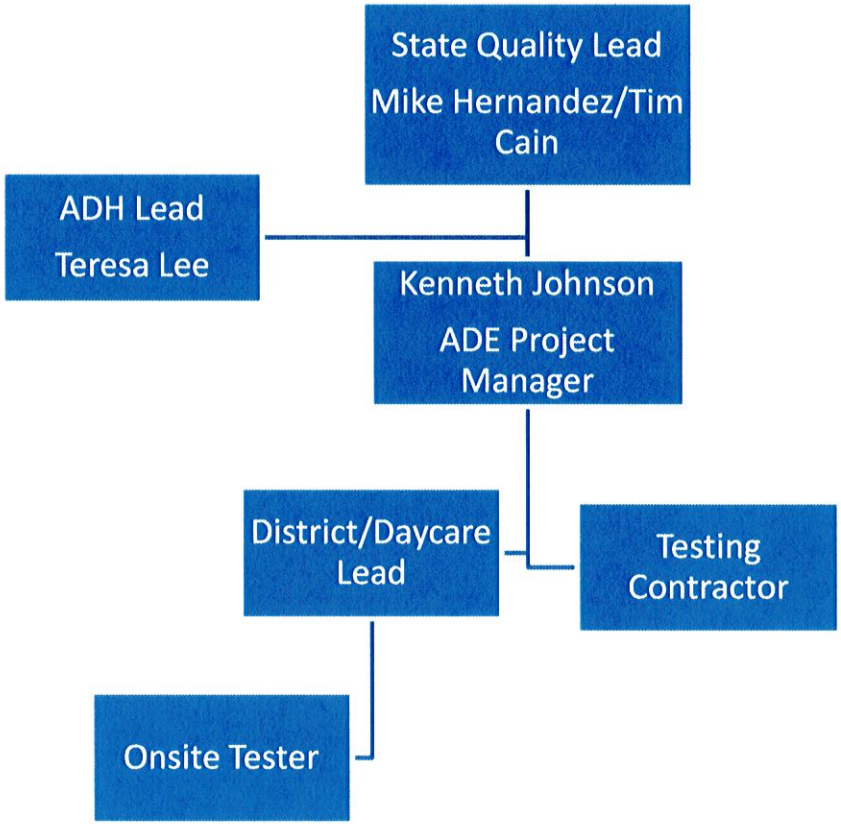
A4. Project/Task Organization



A5. Problem Definition /Background

Authorized under the Water Infrastructure Improvements for the Nation (WIIN) Act, the Lead Testing in School and Child Care Program Drinking Water Grant creates a voluntary program to assist with testing for lead in drinking water at schools and child care programs. The grant will include approximately $43.7 million in funding.

Nearly 56 million Americans, including 53 million children, spend their days in schools. School officials need to know if the drinking water students, teachers, and staff consume contains elevated levels of lead because exposure to lead can cause serious health problems, particularly for young children. The U.S. Environmental Protection Agency (EPA) developed the *3Ts for Reducing Lead in Drinking Water in Schools: Revised Technical Guidance* to assist schools in safeguarding their occupant's health. The guide provides information schools need to:

- Identify potential sources of lead in their facilities
- Monitor school drinking water for elevated lead levels
- Resolve problems if elevated lead levels are found
- Communicate about their lead control programs

Although public water systems that supply water to most schools may meet EPA's lead standards, lead can still get into school drinking water. As water moves through a school's plumbing system, lead can leach into the drinking water from plumbing materials and fixtures that contain lead. Testing is the best way for schools to know if there are elevated levels of lead in a facility's drinking water.

Arkansas will follow a two-step sampling process to test for lead in drinking water. The two-step process will help schools determine if particular outlets have elevated lead levels and locate the source of the problem. The recommended testing plan allows schools to determine if the source of lead is at the sampled outlet or within the facility's interior plumbing.

There is no higher priority for Arkansas than protecting public health and ensuring the safety of our state's drinking water. Under the Safe Drinking Water Act, the Department of Education has primary responsibility for the implementation and enforcement of the drinking water WIIN Grant 2107.

Arkansas is initiating a voluntary drinking water testing program at schools and child care facilities as part of our goal to eliminate lead in drinking water.

For this voluntary lead testing program, the Department of Education and the Arkansas Department of Health are working together to identify and implement lead sampling at schools and child care facilities within Arkansas. While the Department of Education has primacy within schools, Governor Asa Hutchinson recognizes the effective protection of drinking water is a shared concern involving governments, public water systems, consumers, and other stakeholders.

As part of this sampling initiative, the plan includes developing an inventory of drinking water coolers and taps used for food preparation and cooking in each school or day care facility's water system. With candidate facilities' consent and approval, Arkansas is planning to sample lead levels within each school, Head Start Center, day care facility, and other similar facilities. Samples will be collected and analyzed at no cost to the schools and final laboratory results will be shared with each school along with a suggested action plan for the school's consideration.

A6. Project/Task Description

The Arkansas has identified about 1500 facilities that will be tested for lead in drinking water. The project will consist of four parts:

Part 1: Identification/ranking priority of schools, Head Start Centers, day care facilities, and other similar facilities. Priorities will be based on facilities that serve children under six years of age, facilities that serve low-income areas, and buildings built before the lead ban of 1986.

Part 2: Conduct a plumbing profile and sampling plan to identify potential sampling locations within facilities and to confirm if any water coolers contain lead components by cross referencing the model number with EPA's document entitled *3Ts for Reducing Lead in Drinking Water in Schools* document (EPA 815-B-18-007; October 2018) in Appendix B.

Part 3: Conduct sampling of water coolers and kitchen sinks.

Part 4: Reporting of results

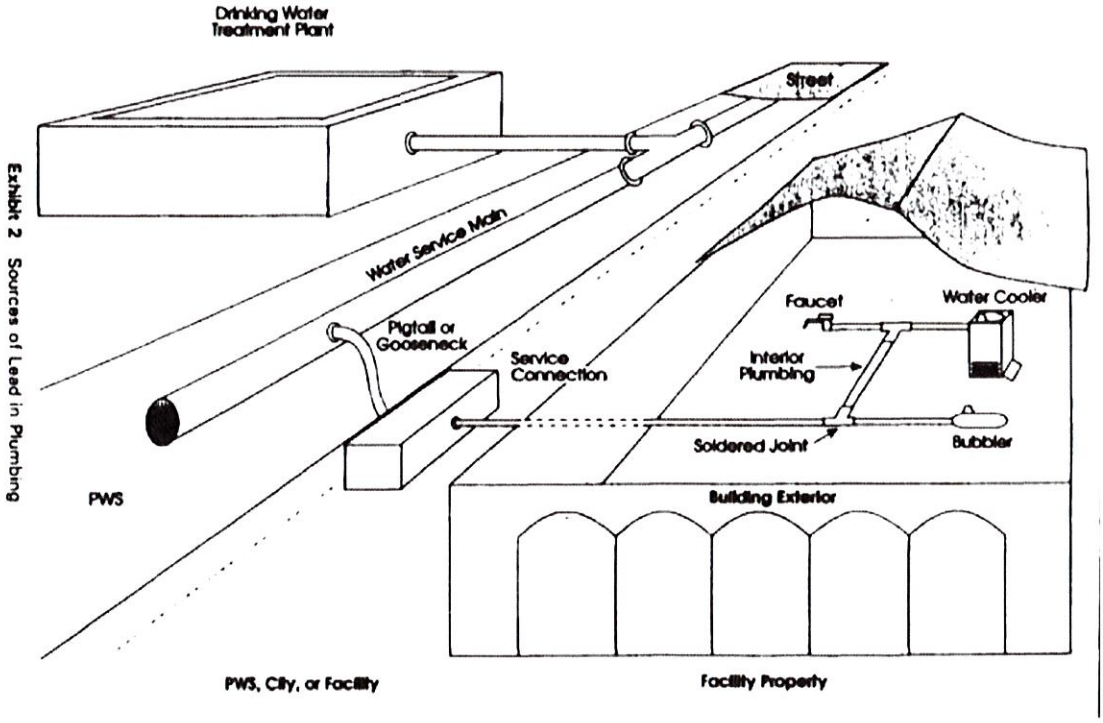
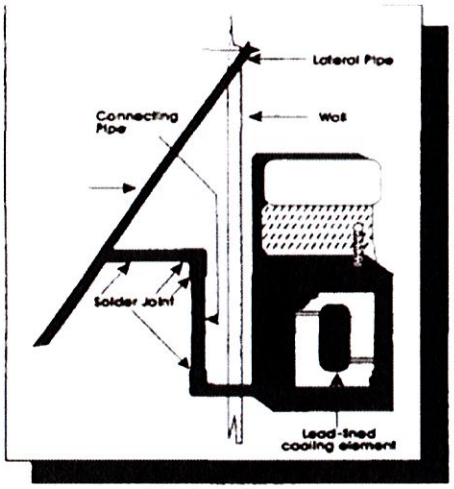
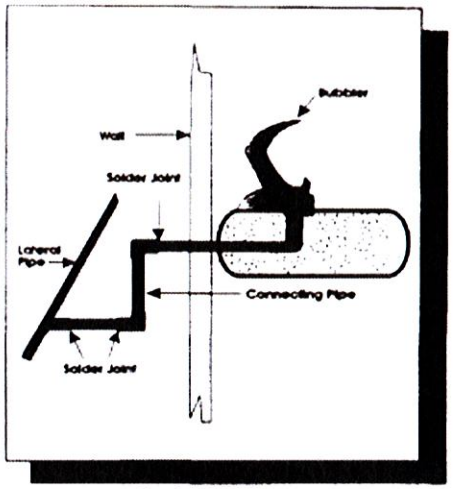


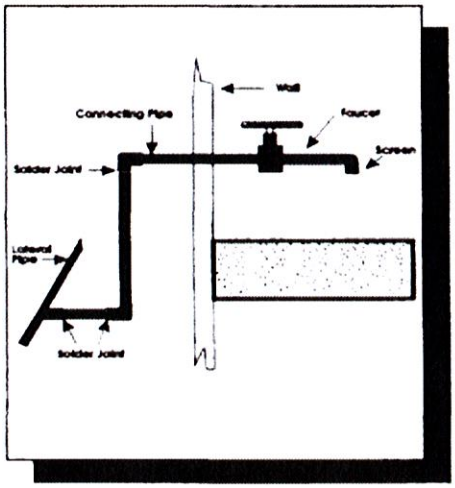
Exhibit 2 Sources of Lead in Plumbing



Water Cooler



Bubbler



Faucet (Tap)

Sources of Lead in Drinking Water

Common sources of lead in drinking water include:

- solder
- fluxes
- pipes and pipe fittings
- fixtures (e.g., brass faucets containing alloys of lead)
- sediments

Exhibit 3 Common Drinking Water Outlets

Exposure to lead is a significant health concern, especially for young children and infants whose growing bodies tend to absorb more lead than the average adult. Pregnant women and fetuses are also vulnerable to lead in addition to middle aged men and women. Drinking water represents one means of lead exposure. Some drinking water pipes, taps, and other outlets (apparatus dispensing water) in buildings and homes may contain lead. The lead in such plumbing may leach into water and pose a health risk. The longer water remains in contact with leaded-plumbing, the more the opportunity exists for lead to leach into water. As a result, facilities with on again/off again water use patterns, such as schools and businesses, may have elevated lead concentrations.

Even though water delivered from a community's public water supply must meet Federal and State standards for lead, you may still end up with too much lead in your drinking water because of the plumbing in your facility and because of the building's water use patterns. The only way to be certain that lead is not a problem in a particular home, school, or building is to test various drinking water outlets (taps, bubblers, coolers etc.) for the substance. If lead problems are found, they can be corrected.

This Quality Assurance Project Plan (QAPP) is intended to aid in determining whether your facility has a lead-in-drinking-water problem. This QAPP is designed to provide you step-by-step instructions for sampling your water for lead and correcting lead problems when found. In addition, the QAPP provides information concerning the sources and health effects of lead, how lead gets into drinking water, how lead in drinking water is regulated, and how to communicate lead issues with users of your facility.

Lead is a toxic metal that can be harmful to human health when ingested or inhaled. Even small doses of lead can be harmful. Unlike most other contaminants, lead is stored in our bones, to be released later into the bloodstream. Thus, even small doses can accumulate and become significant. The groups most vulnerable to lead include fetuses and young children. **Pregnant women and fetuses**: Accumulated lead stored in mothers may damage a child before it is born, causing a lower birth weight and slowing down normal physical and mental development. Studies suggest that even low levels in the mother may later affect an infant's mental performance. **Young Children:** Especially those under the age of six, are particularly sensitive to the effects of lead. Their bodies are still developing, and small children process lead differently than adults and tend to absorb more than adults. Thus, lead can affect them at smaller doses. Even at low levels of lead exposure, children may experience lower IQ levels, impaired hearing, reduced attention span and poor classroom performance. At high levels, lead can seriously damage the brain. **Middle-aged Men and Women**: Studies have found an association between blood-lead levels and slight increases in blood pressure among adults.

The degree of harm from lead exposure depends on several factors including frequency, duration, and dose of the exposure(s) and individual susceptibility factors (age, previous exposure history, nutrition, health). In addition, the degree of harm depends on one's total exposure to lead from all sources in the environment - air, soil, dust, food, and water. Lead in drinking water can be a significant contributor to overall exposure to lead, particularly for infants whose diet consists of liquids made with water, such as baby food formula.

Corrosion: Lead can get into drinking water after the water leaves the treatment plant or well and contacts the plumbing materials containing lead. The physical/chemical interaction that occurs between the water and the plumbing is referred to as corrosion. The extent to which corrosion occurs contributes to the amount of lead that can be picked up by the drinking water. Some communities have lead components in the distribution system (lead joints in cast iron mains, pipes, service connections, pigtails, and goosenecks). However, the public water supplier is responsible for making sure that the distribution system under the utility's control does not contribute harmful amounts of lead. Interior plumbing, soldered joints, and various

drinking water outlets that contain lead materials are the primary contributors of lead in drinking water.

Factors Contributing to Corrosion: The corrosion of lead tends to occur more frequently in "soft" water and acidic water. Other factors, however, also contribute to the corrosion potential of the water and include water velocity, temperature, alkalinity, chlorine levels, the age and condition of the plumbing, and the amount of time the water is in contact with the plumbing. Public water system officials routinely undertake activities aimed at controlling the corrosion characteristics of their water supplies. Their treatment activities can lead to a protective coating of minerals being formed on the inside layer of the pipes, thereby insulating the drinking water, in effect, from lead. The activities undertaken by individuals and building owners/operators to identify and remove problem plumbing are also critical.

It is estimated that the identification of schools, Head Start Centers, day care facilities, and other similar facilities will begin in Fall 2019 (Part 1). During the identification phase, a plumbing profile and sampling plan will be generated to identify potential sampling locations within the facilities along with identifying water coolers listed in the *3Ts for Reducing Lead in Drinking Water in Schools* document (EPA 815-B-18-007; October 2018) in Appendix B (Part 2).

Potential sampling of water coolers will take place in 2020 at schools, Head Start Centers, day care facilities, and other similar facilities within the jurisdiction (Part 3).

Reporting of results to officials will follow the reporting schedule based on when the sample was submitted to the Laboratory (Part 4).

A7. Quality Objectives and Criteria

The quality objectives for the EPA WIIN 2107 Lead Testing in Schools Grant is to establish a list of schools, Head Start Centers, day care facilities, and other similar facilities. This list will be used to collaborate with schools to conduct sampling of water fountains and faucets at these facilities to look for the presence of lead in the drinking water that may act as a chronic source of lead to children and pregnant or nursing mothers, and to identify and notify the proper officials of any water coolers that contain lead components. Plumbing profiles and sampling protocols are based on the EPA's document entitled *3Ts for Reducing Lead in Drinking Water in Schools and Childcare Facilities* document (EPA 815-B-18-007; October 2018) Module 4 and Module 5. Onsite water cooler model numbers will be cross referenced with EPA's list of water coolers known to contain lead components in Appendix B of the *3Ts for Reducing Lead in Drinking Water in Schools and Childcare Facilities* document (EPA 815-B-18-007; October 2018).

A8. Special Training/Certification

The samplers associated with this project will be trained on identifying water coolers that contain lead by cross referencing the model number of the cooler with EPA's document entitled *3Ts for Reducing Lead in Drinking Water in Schools* document (EPA 815-B-18-007; October 2018) in Appendix B, collecting samples (Section E.2 Lead Sampling Instructions), completing a chain of custody, and shipping samples.

Training will consist of conference calls, webinars, and hand-out materials to ensure that all samplers are following approved sampling and shipping procedures. Sessions will be based on the guidance in EPA's *3Ts for Reducing Lead in Drinking Water in Schools and Childcare Facilities* (EPA 815-B-18-007; October 2018) to ensure that all samplers are following approved sampling and shipping procedures. At the successful completion of these tasks, a sampler is then allowed to sample in the field.

A9. Documents and Records

Any updates to the Quality Assurance Project Plan for EPA WIIN 2107 Grant will be communicated and disseminated to all individuals associated with the project.

The Chain of Custody Record (COC) will be used to document samples that are collected under this project. The Contract Laboratory will be responsible for providing the COC when the sample bottles are shipped to each facility.

Laboratory reports will be generated by the Contract Laboratory for all samples received by the laboratory. Data will be released by the laboratory after internal quality control reviews. Each set of samples from each individual school, Head Start Center, day care facility, or similar facility will be assigned a unique project number upon arrival at the laboratory.

Once data are released, the Arkansas Department of Education will provide a notification report to the entity. Should any result exceed the Action Level of 0.015 mg/L for lead, notification will follow the recommendations of the Water Infrastructure for Improvements to the Nation (WIIN) Act.

Any Arkansas employee that receives data indicating that a school, Head Start Center, day care facility, or other similar facility within the state served by a public water system that contains lead in the drinking water that exceeds the lead action level, must send a notification within 24 hours to the manager responsible for the Public Water System Supervision (PWSS) program in the Arkansas Department of Health and EPA Region 6 (Mr. James Brown and Ms. Kim Ngo). In turn, the Arkansas employee that receives the applicable data or a designated individual in the drinking water program will complete a Notification template (section E1.

Notification Letter). Arkansas will complete this document within 24 hours and send it to the governor, school, and public water system.

Records of chemical analyses shall be kept for not less than 10 years along with field logs, sample demographics, and field notes. These documents will be kept at the Arkansas Department of Education's and he Arkansas Department of Health's secured computer networks.

Quarterly management progress reports will be generated to provide status of the project along with any other issues or concerns.

B1. Sampling Process Design (Experimental Design)

The Arkansas Department of Education has identified facilities and a ranking/priority process (schools, Head Start Centers, day care facilities and other similar facilities) that will be tested for lead in drinking water. This ranking system is based on age of building, underserved areas, and those serving young children. At each site, the number of samples are dependent on the size of the building, the number of water coolers, number of water taps, and other drinking water taps. A facility could have anywhere from 4 to 15 water taps. Based on this estimate, the project could potentially have anywhere from 1,500 to 15,000 samples to be collected and analyzed. Arkansas is capping the number of samples to 30 per building based on responses to the plumbing profile to ensure completion of the project and coverage of all identified facilities.

Samples that will be collected are finished drinking water collected from a dispenser such as a water bubbler, water cooler, or water tap or sinks used to prepare food.

Sampling locations will be determined from Part 1 and Part 2 of the project. Once facilities have been identified, a plumbing profile and sampling plan can be utilized to identify potential sampling locations within the facility and determine the exact number of samples.

Should a sampling location be identified as a water cooler referenced in EPA's document entitled *3Ts for Reducing Lead in Drinking Water in Schools* document (EPA 815-B-18-007; October 2018) in Appendix B, **the sampling location will not be sampled and the facility will be notified that a water cooler on its premise contains lead and it is recommended that it be turned off and removed.**

The analytical parameter of interest that will be measured will be lead in finished drinking water using **EPA Method Example 200.8.** Determination of Trace Elements in Waters and Wastes by Inductively Couple Plasma – Mass Spectrometry. The National Environmental Laboratory Accreditation Program (NELAP) will be used to identify the lab for analysis.

B2. Sampling Methods

1. 2-Step Sampling at the Tap

EPA recommends that schools and child care facilities conduct a 2-step sampling procedure to identify if there is lead in the outlet (e.g., faucet, fixture, or water fountain) or behind the wall (e.g., in the interior plumbing). These samples should be taken after an 8 to 18-hour stagnation period.

Two-step sampling consists of taking a 250 ml first draw sample at all taps used for consumption to identify potential lead in the fixture. If the result of the first sample is high, a second 30-second flush sample is taken to identify lead in the plumbing behind the fixture.

Please note that this section contains recommendations that are generalized for typical plumbing configurations. The **Detailed Fixture Evaluation** in *3Ts for Reducing Lead in Drinking Water in Schools: Revised Technical Guidance* contains details on types of fixtures and targeted sampling.

These samples can be taken in the same sampling event, which can reduce cost, and provide you with more information on lead levels. If not taking these samples at the same time, and elevated lead levels have been found in Step 1, the water should not be consumed while preparing to take the follow-up flush sample. More information on immediate steps is in **Module 6** found in *3Ts for Reducing Lead in Drinking Water in Schools: Revised Technical Guidance.*

Step 1: Initial First Draw Samples

Take first draw samples from fixtures throughout the building that are used for human consumption. EPA strongly recommends that you collect these samples from all outlets used for drinking or cooking, prioritizing the high-risk outlets (i.e., fixtures that are known to or potentially contain lead and fixtures that are used most frequently). The plumbing profile will help pinpoint those high-risk fixtures and to prioritize sample collection.

Important: schools and child care facilities should not use sample results from one outlet to characterize potential lead exposure from all other outlets in their facility. This approach could miss localized lead problems that would not be identified.

The first draw sample identified in Step 1 is representative of the water that may be consumed at the beginning of the day or after infrequent use. This protocol maximizes the likelihood that the highest concentrations of lead will be found because the first 250-mL sample is collected after overnight stagnation (the water sat in the pipes for at least 8 hours).

Procedures for initial outlet samples are summarized below:

- All samples should be collected before the facility opens and before the fixtures have been used (EPA recommends an 8 to 18-hour stagnation period).

- One 250-mL sample should be taken at each fixture. Note this is a first-draw sample. Therefore, collect the sample immediately after opening the faucet or valve.

- Compare all sample results to prioritize follow-up sampling and remediation. Outlets with elevated lead levels should not be made available for consumption.

High Results Due to Particulate Lead:

If initial first draw sampling results reveal high lead levels in the 250-mL sample for a given outlet, a contributing source of the elevated lead levels could be the debris in the aerator or screen of the outlet. By cleaning the aerator or screen and retesting the water following the initial first draw sampling procedures, you can identify whether the debris is contributing to elevated lead levels.

Determining aerator/screen debris contribution:

Scenario 1: The initial sample result is 19 ppb; you decide to see if the aerator is contributing to lead in the water. After cleaning out the aerator, you take another first-draw sample. The results come back less than or close to the detection level (e.g., 1 ppb). This result indicates that the debris in the aerator was likely contributing to elevated levels in the fixture. Continue to clean the aerator on a regular basis; continued use of the outlet should be acceptable. However, please note that without regular maintenance, this outlet may serve water with elevated lead levels.

Scenario 2: The initial sample result is 22 ppb; you decide to see if the aerator is contributing to lead in the water. After cleaning out the aerator, you take another first-draw sample. The second sample result is very close or equivalent to the 22-ppb sample. Since the initial sample and post-cleaning first-draw sample results are similar, the problem is likely not the aerator.

Scenario 3: The initial first draw sample result is 60 ppb; you decide to see if the aerator is contributing to lead in the water. After cleaning the aerator, you take another first- draw sample. The post-cleaning sample result is 25 ppb. Although the results are lower, they are still high; this indicates that the aerator is likely a contributing source and that the outlet itself and/or the plumbing upstream of the aerator are contributing as well. If this situation occurs, the school should take this fixture offline, and continue with 2-step sampling or consider the Detailed Fixture Evaluation in Appendix D found in *3Ts for Reducing Lead in Drinking Water in Schools: Revised Technical Guidance* to target the additional contributing sources.

When taking a second first-draw sample, please remember to follow the same sampling procedure as the initial first-draw sample. Ensure that fixtures and outlets have been out of use for 8-18 hours, sampling before students arrive at the facility.

Step 2: Follow-Up Flush Samples

If initial test results reveal elevated lead, follow-up flush testing described in Step 2 is recommended to determine if the lead contamination results are from the fixture or from interior plumbing components. Follow-up flush samples generally involve the collection of water from an outlet where the water has run for 30 seconds.

The purpose of Step 2 is to pinpoint where lead is getting into drinking water (i.e., fixtures versus interior plumbing) so that appropriate corrective measures can be taken.

Procedures for follow-up outlet samples are shown below:

- As with initial first draw samples, follow-up flush samples are to be taken before a facility opens and before any water is used. For best results, flush samples from different outlets that are in close proximity should be collected on different days. For drinking fountains or other fixtures that are manifolded closely together, a single flush sample may be representative of the shared interior plumbing.

- The sampler should be careful to maintain a consistent rate of flow when collecting flush samples.

- Open up the tap and let the water run for 30 seconds. Then, take a 250mL sample. Make sure to label this sample bottle as the flush sample.

Sampling Dos and Don'ts

Do:

- Follow the instructions provided by the laboratory for handling sample containers to ensure accurate results.

- Assign a unique sample identification number to each sample collected. Use a coding scheme to help differentiate samples, and don't forget to label each sample bottle.

- Collect all water samples before the facility opens and before any water is used. The water should sit in the pipes unused for at least 8 hours but not more than 18 hours before a sample is taken.

- Learn how water flows in your facility. If there are multiple floors, it is typically recommended to sample from the bottom floor and continue up. Start sampling closest to the main and work away.

Don't:

- Remove aerators prior to sampling. Potential sources of lead may be missed if aerators are removed, since debris could be contributing to the lead in drinking water if particles containing lead are trapped behind aerator screens.

- Flush water prior to sampling, unless instructed to do so. Flushing can be a tool to improve water quality, especially after long holidays or weekends. However, flushing prior to sampling may cause results showing lower-than representative lead levels in the water. See *3Ts for Reducing Lead in Drinking Water in Schools: Revised Technical Guidance* for more information.

- Close the shut-off valves to prevent their use prior to sample collection. Minute amounts of scrapings from the valves can produce results showing higher-than-representative lead levels in the water.

Don't forget to maintain a record!

Recording sample information is critical to tracking and managing water quality year-over-year.

Upon completion of Part 1 and Part 2 of the project, facilities will be identified, the number of samples to be collected will be determined along with their unique location, and the established point of contact for the facility will be identified.

Part 3 of the project is sample collection and will involve the following tasks:

Listing the sampling sites per facility.
Preparation of shipping containers with sampling bottles.
Organizing the documents associated with the shipping containers (Sampling Instructions, Chain of Custody, Shipping Instructions).

Sampling Details

Drinking water samples will be collected in 250 milliliter High Density Polyethylene (HDPE) oblong wide mouth bottles. The 250 milliliter bottles will be supplied by the NELAP Certified contract lab.

Sample analysis will be conducted at a NELAP Certified lab. The samples will be logged in utilizing the laboratory Sample Receiving and Log-In procedure and analyzed by EPA Method 200.8.

All water samples will be collected in 250 ml bottles. This is a smaller sample than the 1-liter volume that is needed for compliance samples under the Lead and Copper Rule as this sample size is more effective at identifying the sources of lead at an outlet because a smaller sample represents a smaller section of plumbing. A smaller sample is also more representative of water per serving consumed by a child.

Water samples will be collected before the facility opens and before any water is used. Ideally, the water should sit in the pipes unused for at least 8 hours but not more than 18 hours
before a sample is taken. Samples will not be collected in the morning after vacations, weekends, or holidays because the water will have remained stagnant for too long and would not represent the water used for drinking during most of the days of the week. Further

information regarding sample sizes and stagnation periods can be found in Module 4 and Module 5 of the *3Ts for Reducing Lead in Drinking Water in Schools: Revised Technical Guidance* document (EPA 815-B-18-007; October 2018).

For stagnant sampling locations, the selected dispenser will be flushed using the calculated flush times below on the day before sample collection occurs by using the length of pipe and diameter from the main to the first sample tap in the building as seen below:

Number of Minutes Needed to Flush Tap at 2 gpm											
Length of Pipe	Inside (Nominal) Diameter of Pipe (inches)										
	3/8	**1/2**	**5/8**	**3/4**	**1**	**1 1/4**	**1 1/2**	**2**	**2 1/2**	**3**	**4**
1	0.00	0.01	0.01	0.01	0.02	0.03	0.10	0.1	0.1	0.2	0.3
5	0.01	0.03	0.04	0.1	0.1	0.2	0.2	0.4	0.6	0.9	1.6
10	0.03	0.05	0.08	0.1	0.2	0.3	0.5	0.8	1.3	1.8	3.3
15	0.04	0.08	0.12	0.2	0.3	0.5	0.7	1.2	1.9	2.8	4.9
20	0.1	0.1	0.2	0.2	0.4	0.6	0.9	1.6	2.6	3.7	6.5
25	0.1	0.1	0.2	0.3	0.5	0.8	1.1	2.0	3.2	4.6	8.2
30	0.1	0.1	0.2	0.3	0.6	1.0	1.4	2.4	3.8	5.5	9.8
35	0.1	0.2	0.3	0.4	0.7	1.1	1.6	2.9	4.5	6.4	11.4
40	0.1	0.2	0.3	0.5	0.8	1.3	1.8	3.3	5.1	7.3	13.1
45	0.1	0.2	0.4	0.5	0.9	1.4	2.1	3.7	5.7	8.3	14.7
50	0.1	0.3	0.4	0.6	1.0	1.6	2.3	4.1	6.4	9.2	16.3
55	0.2	0.3	0.4	0.6	1.1	1.8	2.5	4.5	7.0	10.1	18.0
60	0.2	0.3	0.5	0.7	1.2	1.9	2.8	4.9	7.7	11.0	19.6
65	0.2	0.3	0.5	0.7	1.3	2.1	3.0	5.3	8.3	11.9	21.2
70	0.2	0.4	0.6	0.8	1.4	2.2	3.2	5.7	8.9	12.9	22.8
75	0.2	0.4	0.6	0.9	1.5	2.4	3.4	6.1	9.6	13.8	24.5
80	0.2	0.4	0.6	0.9	1.6	2.6	3.7	6.5	10.2	14.7	26.1
85	0.2	0.4	0.7	1.0	1.7	2.7	3.9	6.9	10.8	15.6	27.7
90	0.3	0.5	0.7	1.0	1.8	2.9	4.7	7.3	11.5	16.5	29.4
95	0.3	0.5	0.8	1.1	1.9	3.0	4.4	7.8	12.1	17.4	31.0
100	0.3	0.5	0.8	1.1	2.0	3.2	4.6	8.2	12.8	18.4	32.6

Sampling locations will have a DO NOT USE sticker on water coolers indicating to the sampling staff that a particular water cooler is to be sampled and to confirm if the holding time is met.

Samples will not be preserved in the field due to safety reasons of bringing in concentrated nitric acid into a facility where children are present.

Samples that are preserved to pH<2 with nitric acid can be held for a maximum of 180 days if the sample is preserved within 14 days of collection. The laboratory will chemically preserve the samples to pH<2 with nitric acid upon arrival at the lab.

B3. Sample Handling and Custody

Prior to sampling, the sampler at the facility will ensure that appropriate flushing has occurred and that a DO NOT USE label has been affixed to each water cooler or water dispenser to ensure that a minimum of 8 hours of inactivity for the dispenser has taken place before a drinking water sample is collected. This will be confirmed by the sampler when the DO NOT USE sticker was issued by comparing it with the current date and time to determine if the minimum 8 hour holding time is met. A sample can be collected once it is verified that the appropriate holding times have been met based on the date and time on the DO NOT USE label.

Samples will be collected at the predetermined sampling locations and documented on the Chain of Custody form. Should a sampling location not be available, an alternate location can be chosen in the field and documented on the chain of custody. In addition, the sampler will notify the sampling coordinator at the Arkansas Department of Education to document these changes. Each individual 250 milliliter sample container will be placed into one sealed quart sized plastic bag. The individual sealed quart sized plastic bags will then be placed into one sealed gallon sized plastic bag per location for shipping.

After all samples have been collected and sealed in plastic bags, the Chain of Custody will be completed where one copy will be kept by the sampler and one copy will be kept by the facility point of contact.

The original copy will be placed in a plastic bag inside shipping container provided by the contract laboratory.. The shipping container will then be delivered to a United Parcel Service shipping location for pick up. The sampler will collect the receipt from the shipping location that the shipping container has been dropped off and ready for shipment to the contract laboratory.

Sampling will be conducted on Tuesday, Wednesday, and Thursday.

Samples can be held for a maximum of 14 days without preservation with nitric acid. Should a sample be held greater than a maximum of 14 days without preservation, the sample will be rejected by the laboratory as unable to process due to exceeding unpreserved sampling holding time.

Examples of the plumbing profile list and sample labels are described below:

Plumbing Profile List

The drinking water tap questionnaire and inventory sheet must be completed before sampling school drinking water. This requires the sampler (i.e. school custodian, environmental technician, or school staff person) to locate and identify all taps that are used for drinking and cooking.

This inventory should include all operating drinking fountains and kitchen sinks used for food preparation or filling drinking water containers. Please also include other faucets **only** if they are used for drinking water such as sinks in the nurse's office, teacher breakrooms, or classrooms. Please do NOT include sites that are not used as drinking water sources by students such as mop closets and garden hoses.

The form should be completed and understandable to both the person conducting the sampling and the school representative. The school representative must be regularly at the school or who frequently visits the school. This familiarity with the school facility means that a quick, accurate response can be provided for any potential issues discovered during sampling.

Pre-Sampling Questionnaire and Drinking Water Tap Inventory (page 1)			
School Name:		Date:	
		Name of Person(s) completing this form:	
Facility Physical Address:			
		Primary Contact Person:	
		Primary Contact Title:	
School Number, Building Number		Primary Contact Phone:	
School Phone Number:		Secondary Contact Name:	
		Secondary Contact Phone:	
School Type (Day Care, Head Start,		Student Age Range:	
Elementary, Middle, High School):		Number of Buildings:	
Number of Students		Year of Oldest Building:	
Who supplies your facility's drinking water		If more than one building, list buildings (with date	
(Name of Water System)?		constructed):	
Are there any flushing plans in place? (If yes, please explain)			
Have there been any major repairs or plumbing replacements since 1986? (If yes, please describe)			
Is there any additional information that you would like to share? (If yes, please describe)			
What is the calculated flush time to the first tap in the building? - (See Directions Sheet)			

1. Please complete all the information requested in the Pre-Sampling Questionnaire and Drinking Water Tap Inventory, if possible, because it provides contact information for the sampler and school facility as well as background information that can help identify potential sources of lead in drinking water.

2. Is there a floor plan or map of this facility? If so, please mark the locations of the drinking water taps and attach the plan to the back of the inventory.

3. Possible Flushing: If the facility will be closed for more than three consecutive days immediately prior to sampling, flushing of the pipes is required. If flushing is required, determine the calculated flush time to the first tap in the building from the main water line. For these stagnant sampling locations, the selected dispenser will be flushed using the calculated flush times the day before sample collection occurs by using the length of pipe and diameter from the main water line to the first tap in the building. Please see the chart on page 19 for calculating flushing times.

4. Sample Tap Name: This name must be unique for each drinking water tap at the school. This description should include the specific location and type of tap so it can be easily identified by the school staff.

5. Examples: Left Drinking fountain in Main Hallway, Right sink in kitchen, Right drinking fountain outside classroom 206, Drinking fountain in playground closest to RM 34

6. Building/Location Reference: The Arkansas Department of Education Facilities and Transportation Division utilizes a unique district/campus/building identification numbering system. This numbering system will be used to identify the school district, school campus, individual building on the campus, and addition to the original building, if any. Examples: 1602 (school district), 055 (Westside High School), 09 (modular classroom). The number 160205509 would indicate the modular classroom on Westside High School's campus, which is in the Westside Consolidated School District.

7. In Use? Indicate if the faucet or fountain is usable by 'Yes' or 'No'. If 'No', please indicate why in the comment section.

8. Example comment: Shutoff because of water leak.

Pre-Sampling Questionnaire and Drinking Water Tap Inventory (page 2)								
School/Childcare Facility Name:								
Drinking Water Tap Name	Building/Location Reference	In Use?	Are There Any Leaks?	Water Cooler Manufacturer	Model Number	Serial Number	Aerator/Filter attached?	Comments

9. Are there any leaks? Please indicate 'Yes' or 'No'. Often this cannot be determined superficially. Therefore, observe the piping leading directly up to the tap for any sign of water stains near the pipes. Leaks must be repaired before a sample may be taken.

10. Drinking Fountain Manufacturer? This is typically found somewhere on the fixture. Note: kitchen sinks might not have identifiable manufacturers.

11. This information is crucial for identifying water fountains with known lead components.

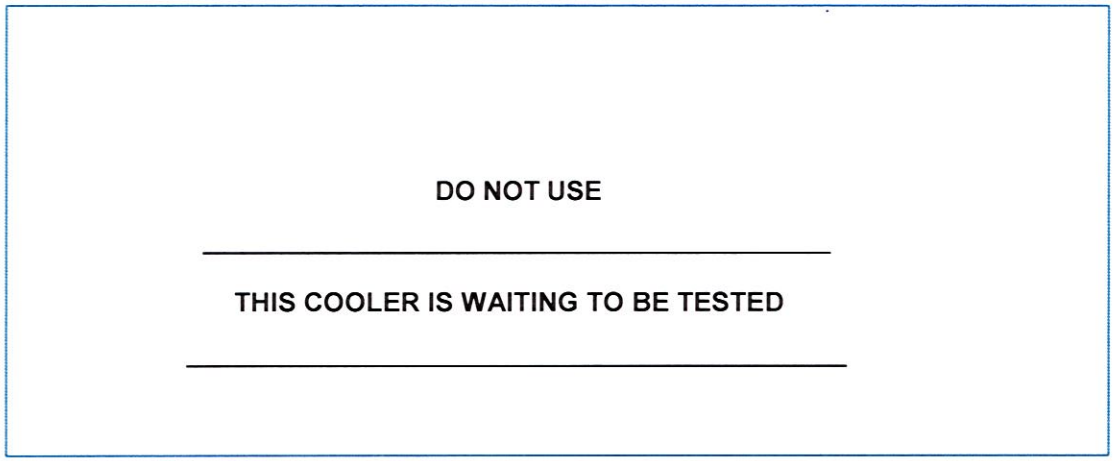
12. Model Number? This is often found near the manufacture name or underneath the fixture. Note: kitchen sinks might not have identifiable model numbers.

13. Serial Number? This is often found near the manufacture name or underneath the fixture. Note: kitchen sinks might not have identifiable serial numbers.

14. Aerator/Filter Attached? Does the faucet or fountain have an aerator, or a filter attached? If so, what brand is the filter? It is crucial to know if these are present when evaluating the appropriate mitigation response if a potential lead source is revealed through testing.

15. Comments: This section should include any information asked for above and any comments regarding the status of the tap, if there are any proposed plumbing changes, or if there is anything else to note. The school representative should turn the sampling tap on/off to test the water flow and note any difficulties that may occur during sampling, such as high water pressure, drinking fountains that are hard to press, or that do not supply an even flow of water. Example: Tap squirts water instead of constant flow. Once you have completed the Drinking Water Tap Inventory sheet, please email the document to the Arkansas Department of Education point of contact for further instructions.

Sample Labels



Sticker Placed on (Date and Time)

Cooler Identification

Sample ID: _____

Sample Location: _____

Date of Collection: _____

Time of Collection: _____

Sampler Initials: _____

THIS SAMPLE IS NOT ACID PRESERVED

Sample Plumbing Profile

The following questionnaire will help you determine whether lead is likely to be a problem in your facility and, if so, whether these problems are likely to be localized or wide spread. These determinations will enable you to prioritize your sampling effort based on those outlets you believe to pose the greatest risks. The significance of your answers to these questions is discussed in Exhibit 6 entitled, What Your Answers to the Plumbing Profile Mean in the *3Ts for Reducing Lead in Drinking Water in Schools: Revised Technical Guidance*

This questionnaire is designed to assist with determining whether lead is likely to be a problem in a facility. A separate plumbing profile may be needed for each building, addition or wing of the facility, especially if the construction of each took place at different times. The questions in the left column will help to determine whether lead is likely to be a problem in a facility and will enable sampling effort prioritization. The middle column is where questions should be answered. Use the right column as a guide to interpret the answers and gain a better understanding of the significance of possible answers. Some of the questions in this questionnaire may not apply to a facility for various reasons. Skip those questions that do not apply.

Plumbing Profile Question	Answers	What Answers to the Plumbing Profile Questions Mean
1. When was the original building constructed? Were any buildings or additions added to the original facility? If so, complete a separate plumbing profile for each building, addition or wing.		**Older Buildings** – Through the early 1900s, lead pipes were commonly used for interior plumbing in certain parts of the country. Plumbing installed before 1930 is more likely to contain lead than newer pipes. After 1930, copper generally replaced lead as the most commonly used material for water pipes. Up until the mid- to late-1980s (until the "lead-free" requirements of the 1986 Safe Drinking Water Act Amendments took effect), lead solder was typically used to join these copper pipes. The efforts of a public water system over the years to minimize the corrosiveness of the water may have resulted in a protective coating of mineral deposits forming on the inside of the water pipes (passivation). This coating insulates the water from the plumbing and generally results in decreased lead levels in water. If the coating does not exist or is disturbed, the water is in direct contact with any lead in the plumbing system.
		Newer Buildings – New buildings are not likely to have lead pipes in their plumbing systems, but they are very likely to have copper pipes with solder joints. Buildings constructed prior to the late 1980s, before the "lead-free" requirements of the 1986 Safe Drinking Water Act Amendments, may have joints made of lead solder. Buildings constructed after this period should have joints made of "lead-free" solders. In addition, "lead-free" brass fixtures or plumbing components purchased or installed prior to 2014, the Reduction of Lead in Drinking Water Act effective date, were allowed to contain higher levels of lead. Even if "lead-free" materials were used in new construction and/or plumbing repairs, lead leaching may occur. See the **Training Section** in *3Ts for Reducing Lead in Drinking Water in Schools: Revised Technical Guidance* for more information on the "lead-free" requirements.

Plumbing Profile Question	Answers	What Answers to the Plumbing Profile Questions Mean
2. If built or repaired since 1986, were "lead-free" plumbing and solder used in accordance with the "lead-free" requirements of the 1986 Safe Drinking Water Act Amendments? What type of solder has been used?		The 1986 Safe Drinking Water Act Amendments banned plumbing components that contained elevated levels of lead. The Reduction of Lead in Drinking Water Act further reduces lead in pipes, pipe fittings, plumbing fittings, and fixtures to a weighted average of 0.25 percent. The Act also redefines "lead-free" under the SDWA to mean: not containing more than 0.2 percent lead when used with respect to solder and flux and not more than a weighted average of 0.25 percent lead when used with respect to the wetted surfaces of pipes, pipe fittings, plumbing fittings, and fixtures. These provisions went into effect in January 2014. In some areas of the country, it is possible that high-lead materials were used until 1988 or perhaps even later. The local plumbing code authority or building inspector may be able to provide guidance regarding when high-lead materials were last used on a regular basis in the area. If "lead-free" materials were not used in new construction and/or plumbing repairs, elevated lead levels can be produced. If the film resulting from passivation does not exist or has not yet adequately formed, any lead that is present is in direct contact with the water.

Plumbing Profile Question	Answers	What Answers to the Plumbing Profile Questions Mean
3. When were the most recent plumbing repairs made? Note the locations.		If the building (or an addition, new plumbing, or repair) is less than 5 years old and lead solder or other leaded materials were used (e.g., brass fixtures containing lead alloys, especially those purchased or installed prior to 2014 when the Reduction of Lead in Drinking Water Act took effect), elevated lead levels may occur. If water supplied to the building is corrosive, lead can remain a problem regardless of the plumbing's age.
4. Of what materials is the service connection (the pipe that carries water to the school or child care facility from the public water system's main in the street) made? Note the locations where the service line enters the building and connects to the interior plumbing.		Lead piping was often used for the service connections that join buildings to public water systems. In larger schools, the service line is probably not lead because lead is impractical for the larger service lines typically used in these facilities; however, many child care facilities reside in small buildings and are at a higher likelihood of being served by lead lines. Some localities required the use of lead service connections up until the "lead-free" requirements of the 1986 Safe Drinking Water Act Amendments took effect. Although a protective layering of minerals may have formed on these pipes, vibrations can cause flaking of any protective build-up and, thus, allow lead contamination to occur.

Plumbing Profile Question	Answers	What Answers to the Plumbing Profile Questions Mean
5. What are the potable water pipes made of in the facility? Examples include: Lead, PVC, galvanized metal, cast iron, copper, or other. Note the location of the different types of pipe, if applicable, and the direction of water flow through the building. Note the areas of the building that receive water first, and which areas receive water last.		Survey the building for exposed pipes, preferably accompanied by an experienced plumber who should be able to readily identify the composition of pipes on site. Most buildings have a combination of different plumbing materials. Lead pipes are dull gray in color and may be easily scratched by an object such as a knife or key. Also, a magnet will not stick to lead. Galvanized metal pipes are gray or silver-gray in color and are usually fitted together with threaded joints. A magnet will stick to galvanized iron pipe. In some instances, compounds containing lead have been used to seal the threads joining the pipes. Debris from this material, which has fallen inside the pipes, may be a source of contamination. Copper pipes are red-brown in color. Corroded portions may show green deposits. Copper pipe joints were typically joined together with lead solders until the "lead-free" requirements of the 1986 Safe Drinking Water Act Amendments took effect.
6. Are there tanks in the plumbing system (e.g., pressure tanks or gravity storage tanks)?		Some older tanks may contain coatings that are high in lead content. Tanks may accumulate sediment that could be flushed back into the plumbing system under certain circumstances. You may wish to contact the supplier or manufacturer to obtain information about coatings. They may also wish to hire a plumber or tank service

Note the locations of any tanks, and any available information about the tank (e.g., manufacturer or date of installation).		contractor to inspect the tanks, especially gravity storage tanks that are located outside of the building. Although EPA encourages routine maintenance of hot water heaters, this guidance does not include sampling hot water outlets or hot water heaters, because hot water is not recommended for consumption (drinking/cooking). See Temperature Control Establishing Routine Practices in the **Taking Action Section** in the *3Ts for Reducing Lead in Drinking Water in Schools: Revised Technical Guidance.*
7. Was lead solder used in the plumbing system? Note the locations with lead solder.		The 1986 Safe Drinking Water Act Amendments banned plumbing components that contained high levels of lead. It is likely that high-lead solder and fluxes continued to be used until 1988 and even later in some areas of the country. The local plumbing code authority or building inspector may be able to provide guidance regarding when high-lead solder was last used on a regular basis in the area. It is important to note that the Reduction of Lead in Drinking Water Act did not revise the "lead-free" definition for solder and flux.

8. Are brass fittings, faucets or valves used in the drinking water system? (Note: Most faucets are brass on the inside.) You may want to note the locations on a map or diagram of their facilities and make extensive notes that would facilitate future analysis of lead sample results.		Brass fittings, faucets, and valves are golden yellow in color, similar to copper in appearance, or are plated with chrome. After 1996, brass fittings installed in drinking water outlets such as faucets and water coolers were required to meet NSF/ANSI standards for lead content (NSF/ANSI 61, NSF/ANSI 372). While this percentage was considered "lead-free" under the 1986 Safe Drinking Water Act Amendments, some contamination problems still may occur. Older brass faucets and components may contain higher percentages of lead and lead solder in their interior construction and pose contamination problems. Note that state or local governments may have imposed this standard prior to 1988. The degree to which lead will leach from brass products containing alloys with less than 8 percent lead is dependent upon the corrosiveness of the water and the manufacturing process used to develop the product. You should request NSF/ANSI 61 certification on all drinking water system products purchased. Include a copy of the NSF/ANSI 61 certificate as a requirement on purchase orders. The distributor or manufacturer can provide a list of certified products. NSF 372 covering pipes, pipe fittings, plumbing fittings, and fixtures was adopted in 2010, and dictates that a product has been certified as meeting a weighted average lead content of less than or equal to 0.25 percent when used with respect to wetted surfaces. See EPA's 2013 guidance, **How to Identify Lead-Free Certification Marks for Drinking Water System & Plumbing Materials** for additional guidance. The Reduction of Lead in Drinking Water Act further reduces lead in pipes, pipe fittings, plumbing fittings and fixtures to a weighted average of 0.25 percent. These provisions went into effect in January 2014.

9. How many of the following outlets provide water for consumption? Water coolers, water fountains with central chillers, cold water taps, ice makers, kitchen taps, or drinking fountains. Note the locations.		In addition to lead components in the plumbing system, lead solders or lead in the brass fittings and valves used in some faucets, fountains, and refrigerated water coolers may be sources of lead. It is important to identify the locations of all such drinking water outlets. Faucets in bathrooms should not be used to obtain water for drinking. Although they may be adequate for washing hands, they may not be appropriate for drinking purposes. However, if bathroom faucets, locker room showerheads, and non-traditional drinking water outlets are known to be used for drinking or cooking (e.g., fill water jugs), sampling should be conducted. You may consider posting "Do Not Drink or Cook" signs.
10. Have you checked the brands and models of water coolers and compared them to the listing of banned water coolers in Appendix B of this document? Note the locations of any banned coolers.		Older water coolers (purchased or installed prior to 1986) may be a major source of lead contamination. See **Module 4** in the *3Ts for Reducing Lead in Drinking Water in Schools: Revised Technical Guidance* for a summary of EPA's list of water coolers found to contain lead. Use the list to help prioritize sampling. If a water cooler is listed as having a lead-lined tank, its water should not be used for drinking, and the cooler should be removed immediately, as these coolers pose the highest risk of contamination.

Plumbing Profile Question	Answers	What Answers to the Plumbing Profile Questions Mean
11. Do outlets that provide drinking water have accessible screens or aerators? (Standard faucets usually have aerator or screens. Many coolers and fountains also have inlet strainer screens.) If so, have the screens been cleaned? Note the locations.		Lead-containing sediments that are trapped on screens can be a significant source of lead contamination. Facilities should create a routine maintenance program to clean the screens regularly. See Cleaning in Establishing Routine Practices of the **Taking Action Section** in the *3Ts for Reducing Lead in Drinking Water in Schools: Revised Technical Guidance*. If sediment has been a recurring problem, regular cleaning of the screens and additional investigation of the reasons for the debris accumulation is appropriate. However, the manufacturer or water service provider should be contacted to obtain instructions for cleaning screens.
12. Are there signs of corrosion, such as frequent leaks, rust-colored water, or stained dishes or laundry?		Frequent leaks, rust-colored water, and stains on fixtures, dishes, and laundry are signs of corrosive water. Blue-green deposits on pipes and sinks indicate copper corrosion; brown stains result from the corrosion of iron. Where such symptoms occur, high levels of lead, copper, and iron may be present in the water.
13. Is any electrical equipment grounded to water pipes? Note the locations.		If electrical equipment has been installed using water pipes as a ground, the electric current traveling through the ground wire will accelerate the corrosion of any interior plumbing containing lead. This practice should be avoided, if possible. However, if existing wires are already grounded to water pipes, the wires should not be removed from the pipes unless a qualified electrician installs an alternative grounding system. Check with the local building inspector on this matter. State or local building codes may require grounding of the wires to the water pipes. Improper grounding of electrical equipment may cause severe shock.

Plumbing Profile Question	Answers	What Answers to the Plumbing Profile Questions Mean
14. Have there been any complaints about bad (metallic) taste?		Although lead dissolved in water cannot be seen, tasted or smelled, the presence of a metallic taste or rusty appearance may indicate corrosion and possible lead contamination.
15. Check building files and ask the public water system to determine whether any water samples have been taken from the building for any contaminants. Name of contaminant(s)? What concentrations of the contaminant(s) were found? What was the pH? Is testing done regularly at the facility?		As discussed in the **Training Section** in the *3Ts for Reducing Lead in Drinking Water in Schools: Revised Technical Guidance*, lead testing may have previously been done voluntarily under the Lead Contamination Control Act. Results of analyses of general water quality, such as measures of pH, calcium hardness and carbonate alkalinity, can provide important clues about the corrosiveness of the water. If there is no data from the school or child care facility, the public water system should at least be able to provide information about the general water quality.
16. Other plumbing questions: Are blueprints of the building available? Are there known plumbing "dead-ends," low use areas, existing leaks or other "problem areas"? Are renovations being planned for part or all of the plumbing system?		You should incorporate this information into decisions regarding sample locations and sampling protocol. They may wish to note the direction of water flow and the location of fixtures, valves, tanks, areas of sediment accumulation, areas of corrosion, etc., on a sketch or blueprint of the plumbing.

B4. Analytical Methods

All finished drinking water samples will be collected in 250 milliliter High Density Polyethylene (HDPE) container wide mouth bottles.

After samples are collected they will be sent via United Parcel Service's shipping to the contract Laboratory where analyses will be conducted.

Upon receipt by the Laboratory, samples will be received and logged in using the lab's standard operating procedures.

Samples will be preserved with nitric acid to a pH<2 if they are received by the laboratory within14 days of collection.

The Laboratory will analyze for the presence of lead in finished drinking water by using EPA Method 200.8: Determination of Trace Elements in Waters and Wastes by Inductively Coupled Plasma – Mass Spectrometry following the standard operating procedure entitled "Aqueous and Solid Sample Preparation by Hot Block Digestion for Metals and Analysis by ICP-MS."

The routine turnaround time for data is around 35 days of sample receipt. The holding time for a preserved lead sample is 180 days.

B5. Quality Control

Quality control procedures defined by the Arkansas Department of Health Laboratory Quality Management Plan (QMP) will be followed during sample receiving and log-in, sample preservation, and sample analysis.

It is anticipated that every tenth shipping container will have field blank placed into the sample set as an internal quality control parameter.

Finished drinking water samples for lead analyses will undergo quality control checks at sample receiving and log-in. The Sample Login Coordinator will confirm the completeness of the chain of custody, sample identification and determine if samples are within14-days of sample collection.

Should any issues arise during sample receiving and log-in, such as leaking containers, incorrect sample identification codes, excessive sample holding

times, or missing paperwork, the Contract Laboratory Sample Control Coordinator will inform the Department of Education's Reporting team.

The Contract Laboratory will follow their internal quality control practices regarding EPA Method 200.8. Should any quality control issues arise during sample analysis, such as instrument failures, spilled samples, carry over issues, or quality control failures, the Contract Laboratory Sample Control Coordinator will inform the Arkansas Department of Education Reporting team.

Each batch of samples undergoing analyses under EPA Method 200.8 using inductively coupled plasma-mass spectrometry for the analysis of lead will have the following quality control samples associated with it:

Blank
Laboratory Control Samples (LCS)
Matrix Spike
Matrix Spike Dup

B6. Instrument/Equipment Testing, Inspection, and Maintenance

Instruments will be maintained in accordance with the manufacturer's recommendations and detailed in the instrument user's manual.

B7. Instrument/Equipment Calibration and Frequency

Instrument/Equipment calibration and frequency will follow EPA Method 200.8 recommendations and the Arkansas Department of Health's Laboratory's QMP.

Records of calibration shall be maintained by the Contract Laboratory.

B8. Inspection/Acceptance of Supplies and Consumables

Drinking water samples will be collected in EPA Method 200.8 250 milliliter High Density Polyethylene (HDPE) oblong wide mouth bottles.

Upon receipt from the vendor, the carton will be confirmed that it was sealed with security tape and no tamper evidence is present. The Certificate of Analysis that is included in each case will be confirmed with the barcode and lot number for traceability and stored in the Arkansas Department of Education file room. Should the carton not have a sealed security tape, show evidence of tampering, or have no Certificate of Analysis, the bottles in the carton will not be used and the vendor will be notified.

Should the carton have a sealed security tape, show no signs of tampering, and have the necessary Certificate of Analysis, the bottles can then be used for the study. The preparation and packaging of the bottles will be performed by the sampling team at the Arkansas Department of Education.

Supplies and consumables utilized by the Contract Laboratory will follow EPA Method 200.8 and the laboratory's internal quality control measures.

An example of approved samples bottles: If sample bottles arrive in Arkansas, and custody seals on each box is confirmed to be secured, and if the certificate of analysis is seen below, bottles can be used for sampling.

QUALITY CERTIFIED™

Certificate of Compliance

The enclosed containers have been chemically cleaned by using the specified USEPA cleaning procedures for low level chemical analysis. Representative containers have been tested by independent certified laboratories for their appropriate use. ESS containers meet and exceed the required detection limits established by the USEPA in SPECIFICATIONS AND GUIDANCE FOR CONTAMINANT-FREE SAMPLE CONTAINERS (OSWER Directive #9240.0-05A).

EXTRACTABLE ORGANIC COMPOUNDS (PROCEDURE 1)

Analyte	Quantitation Limit (µg/L)								
		Aroclor 1016	<0.2	bis(2-Chloroethoxy)methane	<1	Diethylphthalate	<1	Benzo(b)fluoranthene	<0.2
		Aroclor 1221	<0.2	2,4-Dichlorophenol	<1	4-Chlorophenyl Phenylether	<1	Benzo(k)fluoranthene	<0.15
PESTICIDES/PCB'S		Aroclor 1232	<0.2	1,2,4-Trichlorobenzene	<1	Fluorene	<0.15	Benzo(a)pyrene	<0.15
Alpha BHC	<0.005	Aroclor 1242	<0.2	Naphthalene	<0.2	4-Nitroaniline	<1.5	Indeno(1,2,3-cd)pyrene	<0.2
Beta BHC	<0.005	Aroclor 1248	<0.2	4-Chloroaniline	<1	4,6-Dinitro-2-Methylphenol	<1	Dibenz(a,h)anthracene	<0.15
Delta BHC	<0.005	Aroclor 1254	<0.2	Hexachlorobutadiene	<1	N-Nitrosodiphenylamine	<1	Benzo(g,h,i)perylene	<0.15
Gamma BHC (Lindane)	<0.005	Aroclor 1260	<0.2	4-Chloro-3-Methylphenol	<1	N-Nitrosodimethylamine	<1	Benzoic Acid	<5
Heptachlor	<0.005	Aroclor 1262	<0.2	2-Methylnaphthalene	<0.2	4-Bromophenyl Phenylether	<1	Benzyl Alcohol	<1
Aldrin	<0.005	Aroclor 1268	<0.2	Hexachlorocyclopentadiene	<1	Hexachlorobenzene	<1	1,1'-Biphenyl	<1
Heptachlor Epoxide	<0.005			2,4,6-Trichlorophenol	<1	Pentachlorophenol	<1	1,2,4,5-Tetrachlorobenzene	<1
Endosulfan I	<0.005	**SEMIVOLATILES**		2,4,5-Trichlorophenol	<1	Phenanthrene	<0.2	1,4-Dinitrobenzene	<1
Dieldrin	<0.005	Phenol	<1	1,2-Diphenylhydrazine	<1	Anthracene	<0.1	1-Methylnaphthalene	<1
4,4' DDE	<0.005	bis(2-Chloroethyl)ether	<1	Carbazole	<1	Di-n-Butylphthalate	<0.2	2,3,4,6-Tetrachlorophenol	<1
Endrin	<0.005	bis(2-Chloroisopropyl)ether	<1	2-Chloronaphthalene	<0.15	Fluoranthene	<0.1	2,6-Dichlorophenol	<1
Endosulfan II	<0.005	2-Chlorophenol	<1	2-Nitroaniline	<1	Pyrene	<0.15	3-Methylphenol	<1
4,4' DDD	<0.005	2-Methylphenol	<1	Dimethylphthalate	<1	Butylbenzylphthalate	<1	Aniline	<1
Endosulfan Sulfate	<0.005	2,2'-Oxybis(1-Chloropropane)	<1	Acenaphthylene	<0.2	1,2-Dichlorobenzene	<1	Azobenzene	<1
4,4' DDT	<0.005	4-Methylphenol	<1	2,6-Dinitrotoluene	<1	1,3-Dichlorobenzene	<1	Benzaldehyde	<1
Methoxychlor	<0.005	N-Nitroso-di-n-propylamine	<1	3-Nitroaniline	<1	1,4-Dichlorobenzene	<1	Benzidine	<1
Endrin Ketone	<0.005	Hexachloroethane	<1	Acenaphthene	<0.2	3,3'-Dichlorobenzidine	<1	Benzaldehyde	<1
Endrin Aldehyde	<0.005	Nitrobenzene	<1	2,4-Dinitrophenol	<5	Benzo(a)anthracene	<0.15	Caprolactam	<1
Alpha Chlordane	<0.005	Isophorone	<1	4-Nitrophenol	<5	Chrysene	<0.1	Diphenylamine	<1
Gamma Chlordane	<0.005	2-Nitrophenol	<1	Dibenzofuran	<1	bis(2-Ethylhexyl) Phthalate	<1	Pyridine	<1
Toxaphene	<0.005	2,4-Dimethylphenol	<1	2,4-Dinitrotoluene	<1	Di-n-Octylphthalate	<1	**TPH Diesel**	<50.00

PURGEABLE VOLATILE ORGANIC COMPOUNDS (PROCEDURE 2)

Analyte	Quantitation Limit (µg/L)								
		Chloromethane	<0.1	trans-1,2-Dichloroethene	<0.1	1,1,2,2-Tetrachloroethane	<0.1	4-Methyl-2-pentanone	<0.5
		2-Chlorotoluene	<0.1	1,2-Dichloropropane	<0.1	Tetrachloroethene	<0.1	ethyl tert butylether	<0.1
Acetone	<2.0	4-Chlorotoluene	<0.1	1,3-Dichloropropane	<0.1	Toluene	<0.1	tert amylmethylether	<0.1
Benzene	<0.1	2,4-Chlorotoluene	<0.2	2,2-Dichloropropane	<0.1	1,2,3-Trichlorobenzene	<0.1	diisopropylether	<0.1
Bromoform	<0.1	Chloroform	<0.1	1,1-Dichloropropene	<0.1	1,2,4-Trichlorobenzene	<0.1	tert butanol	<0.1
Bromobenzene	<0.1	Dibromomethane	<0.1	cis-1,3-Dichloropropene	<0.1	1,1,1-Trichloroethane	<0.1	o-xylene	<0.1
Bromochloromethane	<0.1	1,2-Dibromo-3-Chloropropane	<0.1	trans-1,3-Dichloropropene	<0.1	1,1,2-Trichloroethane	<0.1	m-xylene(1)	<0.2
Bromodichloromethane	<0.1	Dibromochloromethane	<0.1	Ethylbenzene	<0.1	Trichloroethene	<0.1	p-xylene(1)	<0.2
Bromomethane	<0.1	1,2-Dibromoethane (EDB)	<0.1	2-Hexanone	<0.5	Trichlorofluoromethane	<0.1	p-xylene(1)	<0.2
t-Butylbenzene	<0.1	1,2-Dichlorobenzene	<0.1	Hexachlorobutadiene	<0.1	Trichlorotrifluoroethane	<0.1	1,1-Dichloroethane	<1
n-Butylbenzene	<0.1	1,3-Dichlorobenzene	<0.1	Isopropylbenzene	<0.1	1,2,3-Trichloropropane	<0.005	1,3-Dichloropropene Total	<1
sec-Butylbenzene	<0.1	1,4-Dichlorobenzene	<0.1	4-Isopropyltoluene	<0.1	1,2,3-Trimethylbenzene	<0.1	2-Butanone (MEK)	<1
tert-Butylbenzene	<0.1	Dichlorodifluoromethane	<0.1	Methylene Chloride	<0.5	1,2,4-Trimethylbenzene	<0.1	Acrylonitrile	<1
Carbon Tetrachloride	<0.1	1,1-Dichloroethane	<0.1	Naphthalene	<0.5	1,3,5-Trimethylbenzene	<0.1	Dichlorofluoromethane	<1
Carbon Disulfide	<0.1	1,2-Dichloroethane	<0.1	Propylbenzene	<0.1	Vinyl Acetate	<0.5	Ethanol	<1
Chlorobenzene	<0.1	1,1-Dichloroethene	<0.1	Styrene	<0.1	Vinyl Chloride	<0.1	Tetrahydrofuran	<1
Chloroethane	<0.1	cis-1,2-Dichloroethene	<0.1	1,1,1,2-Tetrachloroethane	<0.1	Methyl Tert Butyl Ether	<0.1	**TPH as Gasoline**	<50.00

METALS, FLUORIDE, NITRATE & NITRITE COMPOUNDS (PROCEDURE 3)

Analyte	Detection Limit (µg/L)								
		Beryllium	<0.01	Iron	<3	Nickel	<0.05	Tin	<0.01
		Cadmium	<0.03	Lead	<0.05	Potassium	<50	Vanadium	<0.1
Aluminum	<0.5	Calcium	<3	Magnesium	<4	Selenium	<0.5	Zinc	<0.3
Antimony	<0.03	Chromium	<0.06	Manganese	<0.1	Silver	<0.02	Fluoride	<1
Arsenic	<0.01	Cobalt	<0.01	Mercury	<0.2	Sodium	<6	Nitrate + Nitrite	<1
Barium	<0.03	Copper	<0.08	Molybdenum	<0.5	Thallium	<0.09		

This certificate only applies to the enclosed containers and not to any added preservative [illegible]

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B9. Non-direct Measurements

The types of data needed to implement this project will consist of physical locations of buildings, locations of plumbing appurtenances (water coolers, dispensers, taps, etc.), facility points of contact, and documenting any water coolers that are found in the facility that match coolers identified in Appendix B – Water Cooler Summary in the *3Ts for Reducing Lead in Drinking Water in Schools and Childcare Facilities* document (EPA 815-B-18-007; October 2018).

Limitations on the use of these data will be dependent on what is found in the facility, the availability of sample taps when the samples are to be collected, and availability of facility points of contact.

These data will be stored in a Microsoft Access database called the Lead in Schools Tracker that will be administrated by the Project Manager.

B10. Data Management

All data will be kept in locked cabinets and in password-protected computers. All databases with identifying information will be password protected. Networks are protected with a firewall to prevent unauthorized access to Agency networks.

In the field, paper documents will be secured using either the locking automobile or secured hotel room. Upon collection of samples, copies of the chain of custody will be provided by the Contract Laboratory.

Upon receipt of the samples and paperwork by the Contract Laboratory, samples received will be checked against the samples documented on the chain of custody record for completeness and data from the chain of custody record will be used to generate laboratory sample identification numbers.

After analysis by the Contract Laboratory, the raw data will undergo quality assurance reviews. After quality assurance reviews have passed, a report will be generated from the Environmental Services Branch Laboratory entitled "ANALYTICAL REPORT FOR SAMPLES – Metals by EPA Drinking Water Method 200.8 – ICP/MS for each facility." The report will be generated in Portable Document Format (PDF) with the lead result presented in micrograms per liter (µg/L). Any lead result greater than the lead action level of 0.015 mg/L or 15 µg/L or 15 ppb will be called to the program manager and the EPA Reporting.

These data will then be submitted to the Arkansas Reporting Team where data will be placed into the Lead in Schools Tracker where a notification form will be generated to be reported back to the Organization, Facility, and Arkansas Management. During this data entry step, data will be examined for outliers and implausible values, and missing data.

Both the ANALYTICAL REPORT FOR SAMPLES – Metals by EPA Drinking Water Method 200.8 – ICP/MS and the notification form files will be stored on the secured EPA server when generated.

Electronically entered facility information will be transferred and stored via password protected Arkansas servers and cannot be accessed except by authorized project staff. Only the project manager and samplers who are involved in data analysis will have access to database. The results of laboratory analyses of the drinking water lead samples will also be entered into computer databases with individual identifying numbers of the facility and sampling location. Arkansas staff participating in this project will have access to the password protected database where these data are not shared off-site with anyone.

C1. Assessments and Response Action

Audits of data quality will be conducted by the Contract Laboratory as analytical results are generated and will undergo the internal laboratory's quality control procedures. The Contract Laboratory may conduct data quality assessments of the overall sample receiving process and reporting process such that the project manager can take appropriate measures to address concerns early in the sampling program.

Self-assessments will be conducted by the sampling team to assess how the field data recording are occurring along with a review of the overall sampling process from sample tap identification to final sampling. Should errors be identified, or additional procedures be initiated regarding data collection, sampling or shipping, the project manager will inform all members of the project team of any changes to procedure or methods immediately. These changes will then be reflected in the QAPP.

C2. Reports to Management

Reports to the EPA, the Arkansas Department of Health Engineering Section and the Arkansas Department of Health Epidemiology Section will be created on a quarterly basis. Data reported to management will consist of the following:

- Number of schools selected for sampling
- Number of schools sampled
- Number of samples generated
- Pending number of samples
- Number of completed reports
- Number of water coolers matching the model number listed in EPA's document entitled *3Ts for Reducing Lead in Drinking Water in Schools* document (EPA 815-B-18-007; October 2018) in Appendix B.
- Number of samples with lead action level exceedances

These reports will be prepared by the project manager or designated representative.

D1. Data Review, Verification, and Validation

The criteria used to review and validate laboratory data and final analytical results will reside with the Contract Laboratory and their internal data validation procedures. Most samples are expected to be accepted except for samples surpassing the 14-day holding period, samples missing their identification label, or leaking samples which will be rejected.

D2. Verification and Validation Methods

The process for verification and validation of data will be determined by the Contract Laboratory's quality control procedures. The Contract Laboratory will be the dedicated location where all quality control checks regarding the raw samples will be conducted for this project. The Contract Laboratory will confirm data on the chain of custody form and compare it to the samples received. If physical samples received match the data entered on the chain of custody form, further processing of the samples can occur. Should data on the chain of custody form not match up with the samples collected, the Contract Laboratory will contact the project manager for further action.

After results have undergone quality control reviews, analytical data will be entered into a report generated by the Contract Laboratory for each facility. This report will be referred to as the laboratory report. These data will then be sent to the Arkansas Department of Education Reporting Team where a summary sheet of the data will be generated such that the entity, facility and water system will be notified of the results.

D3. Reconciliation with User Requirements

Data obtained from this project will answer two questions:

1. If the facility has any water coolers that contain lead components of water coolers that match the model number on EPA's document entitled *3Ts for Reducing Lead in Drinking Water in Schools* document EPA 815-B-18-007; October 2018) in Appendix B.

2. Identify the locations within a facility where lead in drinking water was detected.

These data can then assist the entity, facility and water system with data to make decisions on the removal and replacement of suspected water coolers or additional corrective actions on how to reduce potential exposures to lead in drinking water.

Data from the project will be analyzed for possible outliers, confounders, or anomalies based on sampling locations, building types, and geographic locations.

E1. Notification Report

An example of a notification report that will be distributed to officials, schools, and water systems will consist of the following format:

NOTIFICATION REPORT

Important Information About Your Drinking Water

Lead Sample Results for Your Facility

Dear [School Representative],

Arkansas has received information regarding a lead sample of drinking water taken at your facility. This sample was collected by [sampler information] on [sample date]. The sample shows lead levels that are greater than the lead action level of 15 ppb. It is recommended that the facility take steps listed on the next page to reduce exposures to lead in drinking water.

The following table shows the results of the water sample:

Sample Collected	Lab Results Received	Sample ID	Sample Location	Lead Test Results	MCLG
[Date]	[Date]	[ID Number]	[Location]	[x] ppb	0 ppb

What Does This Mean?

Drinking water that is tested for lead is compared to standards set by the U.S. Environmental Protection Agency (EPA). These standards include:

- Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements. Under the authority of the Safe Drinking Water Act, the EPA set the action level for lead in drinking water at 15 ppb.

- Maximum Contaminant Level Goad (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety. MCLGs are set low enough that drinking water is safe even if its contaminant levels are slightly above the MCLG. Because lead may pose serious health risks, the EPA set an MCLG of 0 ppb for lead.

How Does Lead Enter Drinking Water?

Lead is a toxic heavy metal that is harmful if inhaled or swallowed. The primary sources of lead exposure from the environment are deteriorating lead-based paint, lead-contaminated dust, and lead-contaminated residential soil.

Lead typically enters drinking water through plumbing materials. All buildings, regardless of their age, may have plumbing that contains lead. However, buildings built before 1986 are more likely to have lead pipes, fixtures, and solder. Brass faucets, fittings, and valves, including those advertised as "lead- free," may contribute lead to drinking water. The law currently allows pipes, fittings, and fixtures with up to 0.25 percent weighted average of lead to be identified as "lead-free." Brass faucets and fittings and lead solder can leach into water, especially hot water.

What Are the Health Effects of Lead?

Lead can cause serious health problems if too much enters the body from drinking water or other sources of lead. Adults who drink this water over many years could develop kidney problems or high blood pressure. Lead is stored in the bones and can be released later in life.

Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Pregnant women, infants, and young children have the highest risks of negative health effects from lead exposure. During pregnancy, the fetus can receive lead from the mother's bones, which may affect brain development. Lead exposure in children under the age of six has been linked to damage to the central and peripheral nervous system, learning disabilities, shorter stature, impaired hearing, impaired formation and function of blood cells, and lowered IQ.

If there are concerns about lead exposure, ask a health care provider about testing children to determine the levels of lead in their blood.

How Can I Reduce Exposure to Lead from Drinking Water?

There are several steps one can take to reduce exposure to lead from drinking water:

- **Run water to flush out lead**. The longer water sits in the facility's plumbing; the more lead may leach from lead-containing fixtures. Run water for 30 seconds to 2 minutes until it becomes cold or reaches a steady temperature before using it for drinking or cooking, especially if the water was not used for an extended period.

- **Use cold water to cook and to prepare baby formula**. Do not cook with or drink water from the hot water tap; lead dissolves more easily into hot water. Do not use water from the hot water tap to make baby formula. Remember, boiling water DOES NOT remove lead from water.

- **Identify and replace plumbing fixtures that contain lead**. Brass faucets, fittings, and valves, including those advertised as "lead-free," may contribute lead to drinking water. The law currently allows pipes, fittings, and fixtures with up to 0.25 percent weighted average of lead to be identified as "lead-free." Plumbing materials that are lead free can also be identified by looking for lead free certification marks (http://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100LVYK.txt).

Use an alternative source or treatment of drinking water. Until the concentration of lead in drinking water is mitigated, a different source of drinking water for the facility is recommended. Consider purchasing bottled water or a water filter. Read the package to be sure the filter is approved to reduce lead. Verify the claims of manufacturers by checking with independent certifying organizations that provide lists of treatment devices that they have certified. Additional information can be found on the Lead in Schools NSF website at: (http://www.nsf.org/consumer- resources/water-quality/faucets-plumbing/lead-schools).

- **Regularly clean faucet aerators**. Aerators, the screens at the end of faucets, can collect debris. Rinse out collected materials to reduce debris accumulation.

- **Periodically re-test water for lead**. Call the local water systems to find out how to get water tested for lead.

Contact Information

For more information on reducing lead exposure around the facility and the health effects of lead, visit EPA's Web site at www.epa.gov/lead, call the National Lead Information Center at 800-424-LEAD, or contact a health care provider.

E2. EXAMPLE Lead Sampling Instructions

Directions for Operator Lead Tap Sample Collection Procedures

[Name of Facility]

Number of Sites to be Sampled: _____

These samples are voluntarily being collected to determine the lead levels in the tap water for schools, Head Start Centers, day care facilities, and other similar facilities systems.

Collect samples from a tap that has not been used for at least 8 to 18 hours. To ensure the water has not been used for at least 8 hours, the best time to collect samples is early in the morning. Be sure to use a kitchen or cold water tap that has been used for drinking water consumption.

The collection procedure is described below.

The samples that will be collected will be the following:

Sample ID Number	Drinking Water Tap Name	Sample Location

Bottles will be shipped to the following person:

Name

Address (Physical address only, no post office boxes)

Phone Number

The collection procedure is described below:

1. Open the cooler and review the following: Number of bottles, supplies, paperwork, and shipping labels. If anything is missing, please contact (enter STATE Contact) The number of bottles in this container are provided based on information on the plumbing profile list.

2. **DO NOT SAMPLE ON MONDAY, FRIDAY, OR AFTER HOLIDAYS.** Sample on Tuesday, Wednesday, or Thursday. Monday can be used to perform flushing activities. All initial samples must be "first draw samples" meaning that at the time of sampling the drinking water locations must not have been used during the previous 8 to 18 hours.

   a) The school/facility must not have flushed toilets, watered plants or used water in any other way for at least 8 hours but not more than 18 hours before the water sampler takes the samples. Automated sprinklers that are on at night need to be turned off the night prior to sampling.

   b) All angle stops, shutoff valves, and similar devices on the sample line providing water to the drinking water location must be left in a normal state of operation prior to sampling. Devices located on the sample line must not be modified, opened, or closed in preparation for collecting a sample. Doing so may cause sample results that are not representative of normal operating conditions. Do not remove or clean faucet aerators the week before sampling.

   c) All sample locations need to be taped or covered with a plastic bag by the facility staff the evening prior to sampling to ensure the stagnation period of 8 to 18 hours is met.

   d) Samplers must write clear descriptions of sample tap locations on the laboratory Chain of Custody (COC) form, including type of fixture (such as drinking fountain, tap, bottle filler).

   e) All sample bottles must be labeled with the Sample IDs for each sample location. All samples must be collected in 250 ml, 2-inch diameter wide mouth plastic bottles and all bottles must be completely filled. Bottles must not be overfilled. If a bottle does not fit under the tap at the sample site and cannot be completely filled, a spare 250 ml laboratory bottle may be used to partially fill and transfer the drinking water until the sample bottle is full.

   f) Samplers must request to the laboratory to provide unpreserved sample bottles. All samples must be delivered to the testing laboratory within 72 hours of collection. The sampler is responsible for preserving the samples per the laboratory requirements.

   Above Source: #2 (A-F) Provides example language cited from the State of California's Lead Testing in Schools, 2019, Quality Assurance Project Plan (California Water Boards and DSS)

3. There must be a minimum of 8 hours during which there is no water used from the tap where the sample will be collected. Place the DO NOT USE sticker on the sample sites identified on the plumbing profile list the day before sampling. Early mornings are the best sampling times to ensure that the necessary stagnant water conditions exist.

THIS PART ABOVE THE LINE MUST BE PERFORMED PRIOR TO SAMPLE COLLECTION

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4. Use the identified sampling taps on the plumbing profile list for sampling. If there is a water softener on the tap, collect your sample from a tap that is not attached to a water softener, or a point of use filter, if possible. Do not remove the aerator prior to sampling. Place the opened sample bottle below the faucet and open the cold water tap as you would do to fill a glass of water. Fill the sample bottle to the 250 mL line and turn off the water.

5. Tightly cap the sample bottle.

6. Using the labels provided, write the Sample ID, Sample Location, Date of Collection, Time of Collection, and Sampler Initials then stick the label on the face of the bottle.

7. Place the sample bottle in a sealed quart sized bag

8. Next, enter the sample information on the chain of custody form.

9. Proceed to the next tap for sampling until all identified taps are sampled.

10. After all samples have been collected, review the chain of custody form and tear off the pink copy for your records.

11. Place the chain of custody form in a sealed bag. Place each of the individual quart sized bags into a larger gallon sized bag. Place all bags into the larger trash bag and place this into the cooler.

12. Use bubble wrap or packing material to secure the sample bottles in the container. Use the supplied tape to secure the lid to the cooler.

13. Apply the return shipping label to the cooler and tape around the label to secure it to the cooler. Hazardous chemical labels are not required to be displayed in the shipment of these water samples. Also, no ice is required for shipping.

14. **DO NOT SHIP BEFORE A HOLIDAY.** Hold onto the cooler and ship after the holiday.

15. Take the cooler to a United Parcel Service shipping location for shipment. Drop off locations can be found at www.ups.com. Mail the container to: ENTER Address for lab using the included return shipping label. Should you have any shipping questions, please call John Johns at (000) 000-0000.If you have questions about this sampling project, please call Kenneth Johnson at 501-683-1295. Module 4 (Contract Laboratory has not been determined.)

16. **Initial Sampling**

a. After completing the preparation steps above, the trained sampler collects initial samples using the 3T's Module 5 as guidance. Each drinking or cooking faucet will be sampled using one 250ml bottle. A first draw sample is required to be collected.
b. Upon delivery of the samples to the laboratory, the standard laboratory turn-around-time for receiving results is acceptable. The laboratory must use EPA Standard Method 200.8 with a Minimum Reporting Limit (MRL) of 1 ppb. The laboratory must provide initial test results Arkansas Department of Education (electronically) within 21 days after they receive the sample bottle from the sampler.

c. Each sample location may be photographed (suggestion, photos not required) twice, a close up of the faucet being sampled and a second view of the area surrounding the faucet, so identification can be confirmed. The photos shall be labeled with the Sample ID and provided to the facility staff within 7 business days.
d. Following the review of initial test results, the facility staff should document which drinking water locations are below the Action Level and need no additional testing, and which drinking water locations are above the Action Level and need remediation/corrective action and post-corrective check sampling.

17. **Taking Action:**

a. An **Action Plan** will be developed for (School or Daycare) that have Lead Action Levels outlined above. The Arkansas Department of Health, Department of Education and Department of Health and Human Services Child Care licensing staff will help prioritize schools and daycares to develop and implement Corrective Action Plans. This plan includes the sampling post-remediation to ensure efforts to reduce lead levels were effective.
b. It is recommended that the Department of Education prepare an **Action Plan** if initial sample test results exceed the Action Level. The Action Plan identifies all drinking water outlets that need corrective actions to bring lead levels to less than 15 ppb and then check sampling before returning the drinking water outlets to service. The Department of Education will refer to the 3Ts references for detailed information on taking actions. Actions may include replacing the drinking water outlet with a new fixture, maintenance plans, pipes, and solder amendments.

Above Source: Taking Action Provides example language cited from a modified version from the State of California's Lead Testing in Schools, 2019, Quality Assurance Project Plan (California Water Boards and DSS)

E2. Post Action Sampling Check

a. (School or Daycare) replaced an outlet as an "taking action" method, the outlet needs to assimilate to the water at the facility. Prior to check sampling, it is recommended that the faucet be used regularly for non-drinking water purposes or flushed regularly for one to two weeks. The outlet should not be used for drinking or cooking **until an action check sample has confirmed the level of lead at the outlet is less than the Action Level of 15 ppb.**
b. After completing the preparation steps above, the trained sampler collects two check samples from each outlet where an action has been completed.
c. Following an 8 to 18-hour stagnation period, the trained sampler shall collect one 250 ml first draw sample. Then, following the 2 Step procedure in the 3Ts document, after a 30 second flush, the sampler shall collect a second 250 ml sample.
d. Upon delivery of the samples to the laboratory it shall be requested that results are reported by the laboratory to the Department of Education contact Tim Cain electronically within 21 days of receiving the samples.

E3. Lead Water Coolers Banned in 1988

The Lead Contamination Control Act (LCCA), which amended the Safe Drinking Water Act (SDWA), was signed into law on October 31, 1988 (P.L. 100-572). The potential of water coolers to contribute lead to drinking water in schools and child care facilities was a principal focus of this legislation. Specifically, the LCCA mandated that the Consumer Product Safety Commission (CPSC) order the repair, replacement, or recall and refund of drinking water coolers with lead-lined water tanks. In addition, the LCCA called for a ban on the manufacture or sale in interstate commerce of drinking water coolers that are not "lead-free." Civil and criminal penalties were established under the law for violations of this ban. With respect to a water cooler that may come in contact with drinking water, the LCCA (Section 1461 of SDWA) defines the term "lead-free" to mean:

not more than 8 percent lead, except that no drinking water cooler which contains any solder, flux, or storage tank interior surface which may come in contact with drinking water shall be considered "lead-free" if the solder, flux, or storage tank interior surface contains more than 0.2 percent lead.

Another component of the LCCA was the requirement that EPA publish and make available to the states a list of drinking water coolers, by brand and model, that are not "lead-free." In addition, EPA was to publish and make available to the states a separate list of the brand and model of water coolers with a lead-lined tank. EPA is required to revise and republish these lists as new information or analyses become available.

Based on responses to a Congressional survey in the winter of 1988, three major manufacturers (the Halsey Taylor Company, EBCO Manufacturing Corporation, and Sunroc Corporation) indicated that lead solder had been used in at least some models of their drinking water coolers. On April 10, 1988, EPA proposed in the Federal Register (54 FR 14320) lists of drinking water coolers with lead-lined tanks and coolers that are not "lead-free." Public comments were received on the notice, and the list was revised and published on January 18, 1990 (Part III, 55 FR 1772). See the following page for a list of water coolers and lead components included on that list.

Important Note: The 1990 list is based on a definition of "lead free" in SDWA applicable to drinking water coolers only (SDWA Section 1461). At the time it was enacted, the 8% standard of the definition was the same as the definition of lead free in another section of SDWA applicable to pipes, pipe fittings, plumbing fittings, and fixtures, solder and flux (SDWA Section 1417). Since then, however, the definition of "lead free" for pipes, fittings, and fixtures in Section 1417 was changed as a result of the 2011, **THE REDUCTION OF LEAD IN DRINKING WATER ACT** to a weighted average of 0.25 percent of the wetted surface. **It is still important to test fixtures that are not on this list; especially if they were installed prior to 2014, the year THE REDUCTION OF LEAD IN DRINKING WATER ACT became effective.**

List of Water Coolers and Lead Components

EBCO Manufacturing

All pressure bubbler water coolers with shipping dated from 1962 through 1977 have a bubbler valve containing lead. The units contain a single 50-50 tin-lead solder joint on the bubbler valve. Model numbers for coolers in this category are not available.

The following models of pressure bubbler coolers produced from 1978 through 1981 contain one 50-50 tin lead solder joint each.

CP3	DP15W	DPM8	7P	13P	DPM8H	DP15M	DP3R	DP8A
DP16M	DP5S	C10E	PX-10	DP7S	DP13SM	DP7M	DP7MH	DP7WMD
WTC10	DP13M-60	DP14M	CP10-50	CP5	CP5M	DP15MW	DP3R	DP14S
DP20-50	DP7SM	DP10X	DP13A	DP13A-50	EP10F	DP5M	DP10F	CP3H
CP3-50	DP13M	DP3RH	DP5F	CP3M	EP5F	13PL	DP8AH	DP13S
CP10	DP20	DP12N	DP7WM	DP14A-50/60				

Halsey Taylor

Lead solder was used in these models of water coolers manufactured between 1978 and the last week of 1987:

WMA-1	SCWT/SCWT-a	SWA-1	DC/DHC-1
S3/5/10D	BFC-4F/7F/4FS/7FS	S300/500/100D	

The following coolers manufactured for Haws Drinking Faucet Company (Haws) by Halsey Taylor from November 1984 through December 18, 1987, are not lead-free because they contain 2 tin-lead solder joints. The model designation for these unites are as follows:

HC8WT	HC14F	HC6W	HWC7D	HC8WTH	HC14FH	HC8W	HC2F	HC14WT
HC14FL	HC14W	HC2FH	HC14WTH	HC8FL	HC4F	HC5F	HC14WL	HCBF7F
HC4FH	HC10F	HC16WT	HCBF7HO	HC8F	HC8FH	HC4W	HWCZ	

Lead Lined Tanks

Prior to publication of the January 1990 list, EPA determined that Halsey Taylor was the only manufacturer of water coolers with lead-lined tanks. Below provides a listing of model numbers of the Halsey Taylor drinking water coolers with lead-lined tanks that had been identified by EPA as of January 18, 1990.

Based upon an analysis of 22 water coolers at a U.S. Navy facility and subsequent data obtained by EPA, EPA believes the most serious cooler contamination problems are associated with water coolers that have lead- lined tanks.

Since the LCCA required the CPSC to order manufacturers of coolers with lead-lined tanks to repair, replace, or recall and provide a refund of such coolers, the CPSC negotiated such an agreement with Halsey Taylor through a consent order published on June 1, 1990 (at 55 FR 22387). The consent agreement calls on Halsey Taylor to provide a replacement or refund program that addresses all the water coolers listed below as well as "all tank- type models of drinking water coolers manufactured by Halsey Taylor, whether or not those models are included on the present or on a future EPA list." Under the consent order, Halsey Taylor agreed to notify the public of the replacement and refund program for all tank type models.

Currently, a company formerly associated with Halsey Taylor, Scotsman Ice Systems, has assumed responsibility for replacement of lead-lined coolers previously marketed by Halsey Taylor. If a school or child care facility has one of the Halsey Taylor water coolers noted below, contact Scotsman Ice Systems to learn more about the requirements surrounding its replacement and rebate program.

Scotsman Ice Systems

775 Corporate Woods Parkway Vernon Hills, IL 60061

PH: (800) SCOTSMAN or 800-726-8762

PH: (847) 215-4500

Halsey Taylor Water Coolers with Lead-Lined Tanks

The following six model numbers have one or more units in the model series with lead-lined tanks:

WM8A	WT8A	GC10ACR	GC10A	GC5A	RWM13A

The following models and serial numbers contain lead-lined tanks:

WM14A Serial No. 843034	WM14A Serial No. 843006	WT11A Serial No. 222650
WT21A Serial No. 64309550	WT21A Serial No. 64309642	LL14A Serial No. 64346908